Sheet Metal Connectors, Inc. is proud to be a member or affiliated with the following associations:

- **Sheet Metal Workers’ International Association**
  Washington, DC

- **Sheet Metal Air Conditioning Contractors’ National Association**
  Chantilly, VA

- **SPIDA**
  Spiral Duct Manufacturers Association
  Irmo, SC

- **SMACNA Testing & Research Institute**
  Chantilly, VA
Flat Oval Spiral Pipe & Fittings
Sheet Metal Connectors, Inc. (SMC)

Sheet Metal Connectors, Inc. flat oval single wall duct and fittings are one part of our complete line of HVAC products. Flat oval duct has been designed for restricted space conditions that cannot accept round spiral duct. Flat Oval Spiral Pipe is fabricated in spiral lock seam or longitudinal welded construction. Applied end treatments can be E-Z flange with barrel clamp, standard slip connection, or angle iron rings. Refer to the chart below for specific materials, gauges, and lengths.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>THICKNESS</th>
<th>ASTM</th>
<th>TYPE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvanized</td>
<td>26 - 16 gauge</td>
<td>A-653</td>
<td>G60-G90</td>
<td>1’ to 12’ - 10’ standard</td>
</tr>
<tr>
<td>Paint Grip</td>
<td>24 - 18 gauge</td>
<td>A-653</td>
<td>A60</td>
<td>1’ to 12’ - 10’ standard</td>
</tr>
<tr>
<td>PVS</td>
<td>24 - 16 gauge</td>
<td>A-653</td>
<td>4 x 1, 4 x 4</td>
<td>1’ to 12’ - 10’ standard</td>
</tr>
<tr>
<td>Aluminum</td>
<td>.032 -.073</td>
<td>B-316</td>
<td>3003 H-14</td>
<td>1’ to 12’ - 10’ standard</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>24 - 20 gauge</td>
<td>A-240</td>
<td>304 or 316</td>
<td>1’ to 12’ - 10’ standard</td>
</tr>
</tbody>
</table>

Flat Oval Construction
Flat oval is for positive pressure applications only. See Sheet Metal Connectors, Inc. recommended size and gauge chart below.

<table>
<thead>
<tr>
<th>MAJOR DIMENSION DUCT WIDTH</th>
<th>SPIRAL SEAM DUCT GAUGE</th>
<th>LONGITUDINAL SEAM DUCT GAUGE</th>
<th>GAUGES OF FITTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>To 24”</td>
<td>24</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>26” to 36”</td>
<td>22</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>38” to 48”</td>
<td>22</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>50” to 60”</td>
<td>20</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>62” to 70”</td>
<td>20</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>72” and up</td>
<td>18</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Note: SMACNA Testing and Research Institute verified that Sheet Metal Connectors, Inc. shop standards comply with the 2005-3rd edition of the SMACNA HVAC Duct Construction Standards.

CLOSE CELL NEOPRENE GASKET
Neoprene 1/4” x 1/2” (50’ rolls - 1500’ per box) E-Z Flange Jr.
Neoprene 1/4” x 3/4” (50’ rolls - 1500’ per box) E-Z Flange & TDC

SHEET METAL CONNECTORS, INC.
FABRICATION THAT PERFORMS
MINNEAPOLIS, MN  1-800-328-1966  •  ROCKFORD, IL  1-866-504-4600
Flat Oval Connections

E-Z Flange with Barrel Clamp
The E-Z flange with barrel clamp can be factory installed or shipped loose for field installation. A set consists of two E-Z flanges and one barrel clamp. For field installation the installer attaches the E-Z flange to the pipe and fittings. Next the installer applies the gasket to one flange, mates the two flanges together and attaches the barrel clamp. Sheet Metal Connectors, Inc. also installs E-Z flanges. Flanges are fastened and internally sealed on both ends of spiral pipe and fittings.

Standard Spiral Pipe Connector
Pipe to Pipe connections are made by using a fitting size coupling that slips inside the mating pipe sections, as shown below. A stop bead runs around the middle of the coupling to center the coupling in the connection. Secure the connection by installing sheet metal screws through the outer shell of the duct, 1/2 inch from the stop bead.
Flat oval duct shall be manufactured from Sheet Metal Connectors spiral pipe with the following gauges, unless otherwise specified.

### Flat Oval Spiral Pipe

**Nominal Duct Width** | **Equivalent Round** | **Gauge** | **LBS/FT**
--- | --- | --- | ---
6" x 22" | 12" | 24 | 5.51
25" | 12 1/2" | 22 | 7.54
28" | 13" | 22 | 8.38
31 1/2" | 13 1/2" | 22 | 9.21
34 1/2" | 14 1/2" | 22 | 10.05
37 1/2" | 15" | 22 | 10.89
41" | 15 1/2" | 22 | 11.73
44" | 16" | 22 | 12.56
8" x 21" | 13 1/8" | 22 | 5.51
10" | 14 1/8" | 24 | 7.54
12 1/2" | 15" | 22 | 8.38
15 1/2" | 15 1/2" | 22 | 9.21
17 1/2" | 17 1/8" | 22 | 10.05
20" | 17 1/2" | 22 | 10.89
22" | 18" | 22 | 11.73
24" | 18 1/2" | 22 | 12.56
26" | 19" | 22 | 13.40
28" | 19 1/2" | 20 | 15.57
30" | 20" | 20 | 17.57
10" x 23" | 15 1/4" | 24 | 7.54
12" | 17" | 22 | 8.38
14" | 17 1/4" | 22 | 9.21
16 1/2" | 18 1/2" | 22 | 10.05
18" | 19" | 22 | 10.89
20" | 20" | 22 | 11.73
22" | 21" | 22 | 12.56
24" | 21 1/2" | 22 | 13.40
26" | 22" | 22 | 15.57
28" | 22 1/2" | 20 | 17.57
30" | 23" | 20 | 18.75
32" | 24" | 20 | 19.75
34" | 24 1/2" | 20 | 20.75
36" | 25" | 20 | 21.75
38" | 25 1/2" | 20 | 22.75
40" | 26" | 20 | 23.75
42" | 26 1/2" | 20 | 24.75
44" | 27" | 20 | 25.75
46" | 27 1/2" | 20 | 26.75
48" | 28" | 20 | 27.75
50" | 28 1/2" | 20 | 28.75
52" | 29" | 18 | 30.90
54" | 29 1/2" | 18 | 31.90
56" | 30" | 18 | 32.90
58" | 30 1/2" | 18 | 33.90
60" | 31" | 18 | 34.90
62" | 31 1/2" | 18 | 35.90
64" | 32" | 18 | 36.90
66" | 32 1/2" | 18 | 37.90
68" | 33" | 18 | 38.90
70" | 33 1/2" | 18 | 39.90
72" | 34" | 18 | 40.90
75" | 34 1/2" | 18 | 41.90

### Nominal Duct Width

**Nominal Duct Width** | **Equivalent Round** | **Gauge** | **LBS/FT**
--- | --- | --- | ---
14" x 27" | 20" | 22 | 9.21
30" | 21 1/2" | 22 | 10.05
33" | 22" | 22 | 10.89
36 1/2" | 23 1/2" | 22 | 11.73
39 1/2" | 24 1/2" | 22 | 12.56
42 1/2" | 25 1/2" | 22 | 13.40
46" | 26" | 22 | 15.57
49" | 27" | 20 | 17.57
52" | 28" | 20 | 19.75
55 1/2" | 28 1/2" | 20 | 20.75
58 1/2" | 29" | 20 | 21.75
61 1/2" | 30" | 20 | 22.75
65" | 30 1/2" | 20 | 23.75
68" | 31" | 20 | 24.75
71" | 32" | 18 | 26.90
74 1/2" | 32 1/2" | 18 | 28.90
16" x 25 1/2" | 21" | 22 | 9.21
29" | 22 1/2" | 22 | 10.05
32" | 23" | 22 | 10.89
35" | 24" | 22 | 11.73
38 1/2" | 25" | 22 | 12.56
41 1/2" | 26" | 22 | 13.40
45" | 27" | 22 | 15.57
48" | 28" | 22 | 17.75
51" | 29 1/2" | 22 | 19.75
54" | 30" | 20 | 20.75
57" | 30 1/2" | 20 | 21.75
60 1/2" | 31" | 20 | 22.75
63" | 32" | 20 | 23.75
66" | 32 1/2" | 20 | 24.75
69" | 33" | 20 | 25.75
72" | 33 1/2" | 20 | 26.75
74" | 34" | 18 | 28.90
77" | 34 1/2" | 18 | 30.90
18" x 28" | 23" | 22 | 10.05
31" | 24 1/2" | 22 | 10.89
34" | 25" | 22 | 11.73
37" | 26" | 22 | 12.56
40 1/2" | 27" | 22 | 13.40
43" | 28" | 22 | 15.57
46 1/2" | 29" | 22 | 17.75
50" | 30" | 20 | 18.75
53" | 30 1/2" | 20 | 19.75
56" | 31" | 20 | 20.75
59 1/2" | 31 1/2" | 20 | 21.75
62" | 32" | 20 | 22.75
65 1/2" | 32 1/2" | 20 | 23.75
68" | 33" | 20 | 24.75
71" | 33 1/2" | 20 | 25.75
74" | 34" | 18 | 28.90
77" | 34 1/2" | 18 | 30.90
20" x 29 1/2" | 25" | 22 | 10.89
33" | 26 1/2" | 22 | 11.73
36" | 27" | 22 | 12.56
39 1/2" | 28" | 22 | 13.40
42 1/2" | 29" | 22 | 15.57
45 1/2" | 30" | 22 | 17.75
49" | 31" | 20 | 18.75
52" | 32" | 20 | 19.75
55" | 33" | 20 | 20.75
58" | 33 1/2" | 20 | 21.75
61" | 34" | 20 | 22.75
64 1/2" | 35" | 20 | 23.75
68" | 36" | 18 | 28.90
71" | 37" | 18 | 30.90

* For Equal Capacity and Friction Loss

*Equivalent round dimension is the diameter of the round duct which will have the same volume and friction loss.

These tables are given only as a courtesy. Sheet Metal Connectors is not responsible for any results listed on these charts.
Flat Oval Duct and Fittings

Legend
FOD - Flat Oval Duct  
FOSET - Offset  
FOS - Coupling  
FON - End Cap  
FOTREC - Oval to Rectangular  
FOR - Reducer  
FOE - Elbow  
FOT - Tee  
FOL - Lateral  
FOC - Cross  
FOST - Saddle  
FOY - WYE Fitting  
H - Height  
Z - Dimension of Offset  
V - Body Length  
L - Reducer Length  
R - Radius  
S - Slip (2”)

Dimension
• The “A” dimension is what you see in the plain view.
• The “B” or second dimension is the hidden dimension.

Example: A 24 x 12 FOE-90-5 is a “Hard Bend” or “Long Way” flat oval 90° elbow  
A 12 x 24 FOE-90-5 is an “Easy Bend” or “Short Way” flat oval 90° elbow

When dimensions C x D, and/or E x F, and/or G x H are shown, the first dimension is the plan dimension. If a fitting end is round, use only one dimension.

Conical fittings taper only on plan side.

Vane Chart
For mitered elbows and tees use the following chart if vanes are required.

<table>
<thead>
<tr>
<th>“A” Dimension</th>
<th>Number of Vanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-9”</td>
<td>2</td>
</tr>
<tr>
<td>10-14”</td>
<td>3</td>
</tr>
<tr>
<td>15-19”</td>
<td>4</td>
</tr>
<tr>
<td>20-60”</td>
<td>5</td>
</tr>
<tr>
<td>Over 60”</td>
<td>12” spacing</td>
</tr>
</tbody>
</table>

Ordering
Specify type of fitting and list the following dimensions:

Elbow - A x B  
Laterals - (A x B) x (C x D) x (E x F) x (V)  
Reducers - (A x B) x (C x D) x (V) x (Z)  
Tees - (A x B) x (C x D) x (E x F) x (V)  
Crosses - (A xB) x (C x D) x (E x F) x (G x H) x (V)  
Offsets - (A x B) x (C x D) x (V) x (Z)

The drawings shown on the following pages are illustrative of the types of fittings manufactured. SMC does not recommend deviation from these drawings.
**Fittings**

**FOE-90-5**  **FOE-60-4**  **FOE-45-3**  **FOE-(Angle)-(No. of Pieces)**  
\[ R = A \times 1.5 \]

**FOE-90-2**  **Mitered 90°**  
Specify with or without vanes

---

**FOT-1**  **Straight Tee**

**FOT-1R**  **Reducing Tee**
Fittings

FOCON-T-1
Conical Tee

FOCON-T-1R
Reducing Conical Tee

FOBT
Bull Head Tee
Specify With or Without Turning Vanes

FOBTR
Reducing Bullhead Tee
Specify With or Without Turning Vanes
Fittings

FOL-1
Lateral

FOL-1R
Reducing Lateral

FOCON-L-1
Conical Lateral

FOCON-L-1R
Reducing Conical Lateral

---

Indicates alternative method

---

Indicates alternative method
Fittings

FOC-2
Cross

FOC-2R
Reducing Cross

FOCON-C-2
Conical Cross

FOLC-2
Lateral Cross
Fittings

FOSET
Offset

FOTREC or FOTRND
Oval to Rectangular
Oval to Round

FON-1 for Pipe
FON-2 for Fitting
End Cap

FOS-1 for Pipe
FOS-2 for fitting
Coupling
Fittings

**FOY**
Equal Y Branch

**FOREDY**
Reducing Y Branch

**FOR**
Concentric Reducer

**FOER**
Eccentric Reducer
Specify “Z” Dimension
Specify top up, down or flat
Fittings

- **FOST**
  - Saddle Tap
  - Specify Minor Axis (2xR)

- **FOGST**
  - Conical Saddle Tap
  - Specify Minor Axis (2xR)

- **FOGBT**
  - Grille Box Tap
  - Specify Minor Axis (2xR)

- **FOLST**
  - Lateral Saddle Tap
  - Specify Minor Axis (2xR)
DP1010 WATER BASED DUCT SEALANT - Gray
A smooth, water based, premium quality, U.L. 181 Classified, high velocity duct sealant for commercial and residential use.
Available in 1/12 gallon tubes or 1 gallon pail.
Recommended Uses:
• Sealing metal joints on air duct where a smooth finish is desired
• Sealing connections on flexible duct or fiberglass ductboard
• Intended for use on duct systems which do not exceed 15 inches water column pressure
Meets LEED Requirements for Low Emitting Materials

DP1090 SOLVENT BASED DUCT SEALANT
A premium quality UL Classified high velocity duct sealant, for commercial use.
Available in 1/12 gallon tubes or 1 gallon pail.
Recommended Uses:
• DP1090 is formulated for sealing low, medium and high-pressure metal duct systems in commercial and industrial applications
• DP1090 is intended for use on duct systems which do not exceed 15 inches water column pressure
• DP1090 is ideal for sealing rectangular, round, oval and metal flexible ducts.
Meets LEED Requirements for Low Emitting Materials

DP2501 WATER BASED DUCT LINER ADHESIVE - Clear
A water based, premium quality U.L. Classified duct liner adhesive. DP 2501 is specifically formulated for roller and low pressure spray applications.
Available in 5 gallon pails, 54 gallon drum
Recommended Uses:
• Bonding fibrous duct liner installation to galvanized ductwork
• Sealing cut edges of fiberglass insulation
• Bonding kraft backed foil coverings to fiberglass and urethane flat stock or pipe insulation
• Bonding multiple layers of fibrous insulation board

DP2502 WATER BASED DUCT LINER ADHESIVE - Clear
A water based, premium quality U.L. Classified duct liner adhesive. DP 2502 is a higher viscosity version of DP 2501. DP 2502 is specifically formulated for spray, brush, and roller applications.
Available in 5 gallon pails, 54 gallon drum
Recommended Uses:
• Bonding fibrous duct liner installation to galvanized ductwork
• Sealing cut edges of fiberglass insulation
• Bonding kraft backed foil coverings to fiberglass and urethane flat stock or pipe insulation
• Bonding multiple layers of fibrous insulation board

DP 2590 SOLVENT BASED SPRAY ADHESIVE
A premium quality, solvent based, fast drying, non-flammable, pressure sensitive insulation adhesive. DP 2590 is supplied in a convenient spray system which is both portable and cost effective.
Available in 12# canister or 40# canister. Pro spray gun and 12’ hose sold separately.
Recommended Uses:
• Bonding fiberglass duct liner to galvanized steel, stainless steel and aluminum HVAC duct
• Bonding fiberglass insulation to the exterior of galvanized steel, stainless steel and aluminum HVAC duct
• Sealing and bonding laps in HVAC duct insulation
• Adhering kraft backed foil and foil jacketing to urethane foam

DP 77 INDUSTRIAL SPRAY ADHESIVE
Solvent based industrial strength aerosol duct liner spray adhesive.
Available in 12 oz. spray cans.
Recommended Uses:
• Bonding galvanized metal, wood, fiberglass, foam rubber, cardboard, textiles, cloth and plastics

DP 2” CHIP BRUSH

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Description Application</th>
<th>Colors</th>
<th>Adhesive</th>
<th>Total Thickness mils (mm)</th>
<th>Tensile Strength lbs/in (kg/cm)</th>
<th>Adhesion To Steel ozs/in (g/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>557 Printed</td>
<td>Premium performance duct tape specifically engineered for flex duct systems. Meets UL 181B-FX &amp; UL 723</td>
<td>Grey</td>
<td>Natural Rubber</td>
<td>14.0 (0.36)</td>
<td>45 (8.01)</td>
<td>50 (560)</td>
</tr>
<tr>
<td>229</td>
<td>Heavy duty contractor grade duct tape with extra thick adhesive for conformability Meets UL 181A-P approved</td>
<td>Grey</td>
<td>Natural Rubber</td>
<td>12.0 (0.30)</td>
<td>25 (4.45)</td>
<td>70 (784)</td>
</tr>
<tr>
<td>339 Printed</td>
<td>Dead-soft aluminum foil backed duct tape for fiberglass duct systems. Meets UL 181A-P approved</td>
<td>Silver</td>
<td>Acrylic</td>
<td>4.4 (0.11)</td>
<td>25 (4.45)</td>
<td>72 (806)</td>
</tr>
<tr>
<td>330</td>
<td>All-weather duct tape, working temperature range of -35°F to 260°F, plain dead soft aluminum foil, extremely conformable.</td>
<td>Silver</td>
<td>Acrylic</td>
<td>3.5 (0.08)</td>
<td>20 (3.56)</td>
<td>45 (504)</td>
</tr>
</tbody>
</table>